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**2536 731**

**82 20023**

12

## APPLICATION FOR INVENTION PATENT

A1

22 Submitted on: November 26 , 1982

30 Priority

43 date on which the application was made  
available to the public: BOPI "Brevets" no. 22,  
June 1, 1984

60 References to other related national  
documents:

71 Applicant(s) : GROSPIRON Christian Alphonse -  
FR

72 Inventor (s): Christian Alphonse Grospron

73 Holder (s):

74 Authorized agent(s):

54 Elevating stair steps allowing climbing and descending while moving as on a flat surface.

57 Elevating stair steps with controls sensitive to foot pressure, that alternately come to the level of the next step, allowing physically impaired persons experiencing difficulty in using the stairs, to do it with the same ease as if the surface were flat.

The object of the invention is quickly installed, without the need of major work, on all the kinds of traditional stairs, allowing them to be used, for example, even for a short period of recuperation..

The present invention is aimed at allowing people having difficulties in climbing or descending stairs to do so from now on as easily as if they were moving on a flat surface.

The known solutions are to install a moving track, fixed along the walls, to which a platform that goes from one floor to another is attached. This equipment is costly and sometimes requires major installation work, and also reduces the width of the stairs that may be used by other users.

The installation of an elevator, even more expensive, is often not possible, due to the architecture of the place, and cannot be considered for a temporary solution.

The invention consists of a succession of stair steps that position themselves successively at the level of the next step. The pressure of the foot of the person using it, controls the climbing and descending movement. This eliminates the need for speed limitations. It suffices, when the step on which the person is positioned reaches the level of the next step, to advance onto it, with the next movement taking place only when the control pressure is reached. The same procedure, but in the reverse order, is used for descending. The power supplied to the steps by an external source reaches each step through a tube or cable, according to the means available.

In order to be optimally suited to needs, the invention is characterized by:

- Fig. 1 shows very flat elevating steps, that are to be set on the existing stair steps, without any modification.

- An internal sensitive control in each step, fig. 2, is activated by the foot pressure at a certain point of the step-width; pressure on the back of the step controlling the ascent, pressure on the outer side of the step controlling the descent.

- As seen in fig 3, a backwards move shifts the plane of the step during the ascent, in order to avoid user's toes from being caught by the edge of the step immediately above. The plane of the stair is kept in a horizontal position at all times by the operation of two scissor-like crank links, as shown in fig. 4.

- According to fig. 5, each of the "scissors" is connected to a rod that works under torsion, and serves at the same time as an axis, thus causing any height difference to be transmitted from left to right and vice-versa, in such a way that the moving surface of the step stays parallel to its base.

A height stopper, adjustable, allows the exact leveling of the top of one step with the bottom of the next step.

- According to fig. 6, the front and back edges of the steps are rounded in order to avoid any possibility of the foot being caught up due to the doorstep effect.

- The drawing in fig. 7 shows the plan view of a rectangular step for straight flights of stairs.

- Fig. 8 shows the planar conical step designed for the assembly of a spiral staircase.

- Fig. 9, shows the supply of energy used for bi-directional flight of stairs. This allows the use of the same conical model of steps for stair that turn either right or left.

In the case of very large stairs, only one side may be equipped with elevating steps, while the other side is left in its original state.

In the event of multiple users, control buttons placed at the top and at the bottom, allow activating or turning off the stairs, or putting them in the appropriate departure position.

The whole mechanism being embedded in the base; it is easy in certain cases to give the upper part non-standard dimensions in order to answer esthetic considerations.

## CLAIMS

- 1 - Steps of elevating stairs that are alternately positioned at the level of the next ones, allowing people that use them to make only an horizontal movement from one step to another, much easier for physically, impaired persons, especially those findind it particularly difficult to climb or descend stairs.. These, characterized by the fact that they are very flat, make it possible to use the stairs in the regular way. On the otherhand, the plane of the steps is kept horizontal for the entire period of the ascent or descent by the operation of two scissors-like crank links.
- 2 - Steps of stairs according to claim 1, characterized by a sensitive internal control that activate the movement by the pressure of the foot, make the movement similar to walking on a flat surface.
- 3 - Steps of stairs according to claim 2, characterized by the fact that the pressure of the foot on the back of the step controls the ascent.
- 4 - Steps of stairs according to claim 2, characterized by the fact that the pressure of the foot on the front side of the step controls the descent.
- 5 - Steps of stairs according to claim 3, characterized by the fact that, while ascending, the carrying surface of the step distances itself obliquely from the front of the following step.
- 6 - Steps of stairs according to claim 1, characterized by the fact that the scissors are interconnected by two sets of rods that serve as axes, and work in torsion in order to maintain the same height on both sides, regardless of the carried weight and its position on the carrying surface of the step.
- 7 - Steps of stairs according to claim 1, characterized by the fact that the surface is rectangular for straight flights of stairs.
- 8 - Steps of stairs according to claim 1, characterized by the fact that the surface is trapezoidal for curved flights of stairs.
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- 10 - Steps of stairs according to claim 8, characterized by the fact that the bi-functional stairs receive their power supply *by the edge*.
- 11 - Steps of stairs according to claim 2, characterized by the fact that if several users make use of the stairs at the same time, remote control buttons, placed on top and at the bottom allow the activation or turning off of the device.
- 12 - Steps of stairs according to claim 1, characterized by the fact that an adjustable stopper keeps each step at its upper position, at an adequate height in regard to the following step.
- 13 - Steps of stairs according to claim 12, characterized by the fact that the front and back sides of the upper surface of the step are rounded in order to avoid any possible catching up of the foot due to the doorstep effect, as would happen if the final height were not well adjusted.



# **Analysis of French Patent No. 2 536 731 (filed Nov. 26, 1982)**

**To: GROSPIRON Christian Alphonse**

<b>Citations from the Specification</b>	<b>Remarks</b>
<p>A. "The present invention is aimed at allowing people having difficulties in climbing or descending stairs to do so from now on as easily as if they were moving on a flat surface."</p>	<p>It will be proved by the following analysis that this goal cannot be achieved using the technical information provided in the specification; it should therefore be regarded as merely "wishful thinking"...</p>
<p>B. "... a succession of stair steps that position themselves successively at the level of the next step."</p> <p>"... very flat elevating steps..."</p>	<p>Since it is emphasized by the inventor that the "elevating stairs", which are placed on the "existing stairs", are very flat (see also the proportions in the drawings), it is technically not feasible to elevate the substitute stairs to the level of "the next step" <u>plus the additional height of the extra stair placed on top of the existing stair!</u> There is simply no room for any effective, operable mechanism that can fulfill this requirement.</p>
<p>C. "The pressure of the foot of the person using it, controls the climbing and descending movement."</p>	<p>No technical directions are specified as to how this could be achieved (but only schematic arrows in Fig. 2). This omission is particularly serious. If no special attention is dedicated to the activation mechanism of the system, it will result in exposing users to the danger of injury caused by a step starting to rise (or descend) before standing with <u>both</u> feet thereon.</p>
<p>D. "As seen in fig 3, a backwards move shifts the plane of the step during the ascent ..."</p>	<p>Fig. 3 shows nothing to support this request.</p>
<p>E. "The plane of the stair is kept in a horizontal position at all times by the operation of two scissor-like crank links, as shown in fig. 4."</p>	<p>Fig. 4 actually supplies the ultimate proof that the inventor did not even tackle the problem at hand. The one-set scissors arrangement (often referred to as "lazy-tongs") as schematically shown is unable to lift</p>

	<p>the upper surface of the stair to the required height <u>and</u> backwards, particularly if correct, standard measurements of stairs are to be maintained.</p> <p>In addition, in order to be operable, the scissors <u>must</u> be placed in a place parallel to longitudinal plane of the stairs and not in the perpendicular plane as depicted in Fig. 4.</p>
F. "According to fig. 5, each of the "scissors" is connected to a rod that works under torsion ..."	Fig. 5 is not understandable. Where is the rod? How is it coupled to the scissor links so that it acts under torsion? Where is the motor that drives the scissors up?
G. "A height stopper, adjustable, allows the exact leveling of the top of one step with the bottom of the next step. "	No details are given in the specification or drawings to such control means.
H. "Fig. 9, shows the supply of energy ... "	Fig. 9 shows nothing!

### **Conclusion: Lack of Disclosure**

1. The description of the French patent is imaginative and fictitious. It does not contain the minimum information that will enable a "person of ordinary skill" to follow the description and successfully construct a system that will achieve the goals set forth by the inventor, without exercising additional research, development and inventiveness.
2. French patent No. 2,536,731 should never have been allowed according to basic, well-established rules of patentability as practiced in most countries of the world.

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## **Legal Precedents**

**General Tyre & Rubber Co. v. Firestone Tyre & Rubber Co. Ltd. [1972] R.P.C 457, at 486:**

"To anticipate the patentee's claims the prior publication must contain clear and unmistakable directions to do what the patentee claims to have invented... A signpost, however clear, upon the road to the patentee's invention will not suffice. The prior inventor must be clearly shown to have planted his flag at the precise destination before the patentee."

**Terrell on the Law of Patents, 12<sup>th</sup> Edition (London, Sweet & Maxwell) at page 118:**

"The test whether the disclosure contained in a prior document is such as to invalidate a subsequent invention was stated by Lord Westbury L.C. in *Hills v. Evans*<sup>95</sup> in the following terms: "The antecedent statement must, in order to invalidate the subsequent patent, be such that a person of ordinary knowledge of the subject would at once perceive and understand and be able practically to apply the discovery without the necessity of making further experiments ... the information ... given by the prior publication must, for the purpose of practical utility, be equal to that given by the subsequent patent." "

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<sup>95</sup> 31 L.J.Ch. 457 at p. 463. Also reported (1862) 4 De G. F. & J. 288, 45 E.R. 1193. See also *Armstrong Whitworth & Co. Ltd. v. Hardcastle*, 42 R.P.C. 543 at p. 555.

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## DEMANDE DE BREVET D'INVENTION

A1

(22) Date de dépôt : 25 novembre 1982.

(30) Priorité

(43) Date de la mise à disposition du public de la  
demande : BOPi « Brevets » n° 22 du 1<sup>er</sup> juin 1984.

(60) Références à d'autres documents nationaux appa-  
rentés :

(71) Demandeur(s) : GROSPIRON Christian Alphonse. — FR.

(72) Inventeur(s) : Christian Alphonse Grospron.

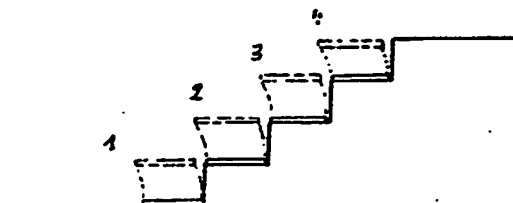
(73) Titulaire(s) :

(74) Mandataire(s) :

(54) Marches d'escalier élévatrices permettant de monter et descendre en se déplaçant comme à plat.

(57) Marches d'escalier élévatrices, à commandes sensibles par pression du pied, se mettant alternativement au niveau des suivantes, permettant aux personnes gênées physiquement dans le franchissement des escaliers de le faire désormais avec autant d'aisance que si le sol était plat.

L'objet de l'invention s'installe rapidement et sans travaux importants dans tous les types d'escaliers traditionnels, ce qui permet d'en user même pour la seule durée d'une convalescence par exemple.



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La présente invention a pour but de permettre aux personnes qui éprouvent des difficultés à gravir ou descendre les escaliers de le faire désormais aussi facilement qu'un déplacement à plat.

- 5 Des solutions connues, consistent à installer un rail de transport, fixé le long des murs, sur lequel est accroché une plateforme faisant la navette d'un étage à l'autre. Cet appareillage, coûteux nécessite des travaux parfois importants d'installation et réduit quelque peu la largeur utile de  
10 l'escalier pour les autres usagers.

La pose d'un ascenseur, plus onéreux encore, n'est pas souvent possible en raison de l'architecture des lieux et ne peut pas être envisagée à titre provisoire.

- L'invention consiste en une succession de marches  
15 d'escalier qui se mettent alternativement au niveau des suivantes. Le mouvement de montée et de descente étant commandé par la pression du pied de la personne qui l'utilise. Ce faisant il n'y a aucune contrainte de vitesse à respecter. Il suffit, lorsque la marche sur laquelle on se trouve vient d'atteindre  
20 la position haute, de s'avancer d'un pas sur la suivante qui ne commencera sa montée que lorsque la pression de commande sera atteinte. Le même processus, mais dans l'ordre inverse, agit pour la descente. L'énergie fournie aux marches par une source  
25 plusieurs suivant les moyens disponibles.

L'invention, afin d'être bien adaptée aux besoins est caractérisée par :

- la figure 1 représente des marches élévatrices très plates, à poser sur des marches d'escalier existantes, sans modifications.
- 30 - une commande sensitive interne à chacune d'elle, fig. 2 déclenchée par la pression du pied en un point quelconque de la largeur, la pression au fond de la marche commandant la montée, la pression au bord extérieur de la marche commandant la descente.
- suivant la fig. 3, un déplacement vers l'arrière déplace le

- 35 plan de la marche pendant sa montée pour éviter de coincer les  
orteils des usagers sous le nez des marches situées immédiatement  
au dessus. Le plan de la marche est maintenu à l'horizontale  
durant toutes les positions, par deux jeux de biellettes en  
ciseaux, suivant la fig. 4.
- 40 - suivant la fig. 5, les ciseaux sont reliés chacun à une  
barre travaillant en torsion et servant d'axe en même temps  
ce qui produit que toute différence de hauteur est transmise  
de gauche à droite et inversement, de façon à ce que le plan  
mobile de la marche reste parallèle à sa base.
- 45 Une butée de hauteur, réglable, permet l'adaptation rigoureuse  
du niveau haut de l'une avec le niveau bas de la suivante.  
- suivant la figure 6, les bords avant et arrière des marches  
sont arrondis pour éviter tout accrochage possible du à un effet  
de seuil.
- 50 - suivant le dessin de la fig. 7 on voit la vue en plan d'une  
marche rectangulaire pour escalier droit.  
- suivant la fig. 8 , on voit la vue en plan d'une marche de  
forme conique destinée à l'équipement d'un escalier tournant.  
- la figure 9 montre l'alimentation en énergie pratiquée sur la
- 55 tranche des marches qui sont retournables. Ce retournement  
permettant d'équiper avec le même modèle conique les escaliers  
tournants aussi bien à gauche qu'à droite.
- Dans le cas d'escaliers très spacieux, un bord seulement peut  
être équipé de marches élévatrices, l'autre partie restant dans
- 60 son état original.
- Si plusieurs usagers utilisent l'escalier, des boutons de  
commandes situés en haut et en bas permettent de mettre en  
service, ou hors service l'escalier, soit placer celui-ci dans  
la position de départ convenable.
- 65 L'ensemble du mécanisme étant solidaire de la base, il est  
aisé de produire la partie supérieure à des dimensions hors  
standard pour répondre, dans certains cas, à des considérations  
d'esthétique.

## REVENDEICATIONS

\*\*\*\*\*

- 1 - Marches d'escalier élévatrices se mettant alternativement au niveau des suivantes, permettant aux personnes qui les utilisent de n'opérer qu'un déplacement horizontal d'une marche à l'autre, beaucoup plus facile pour des gens physiquement gênés, particulièrement dans les escaliers et ceci aussi bien à la montée qu'à la descente. Celles-ci, caractérisées par le fait qu'elles sont très plates, laissant ainsi la possibilité d'utiliser l'escalier de manière ordinaire. D'autre part, le plan de la marche est maintenu à l'horizontale durant toute la course de montée ou de descente par un jeu de biellettes en ciseaux.
- 2 - Marches d'escalier selon la revendication 1, caractérisée par une commande sensitive interne actinnant le mouvement par une pression du pied analogue à la marche à plat.
- 3 - Marches d'escalier selon la revendication 2, caractérisée par le fait qu'une pression du pied dans le fond de la marche commande la montée.
- 4 - Marches d'escalier selon la revendication 2, caractérisée par le fait qu'une pression du pied vers le nez de la marche commande la descente.
- 5 - Marches d'escalier selon la revendication 3, caractérisée par le fait que, dans son mouvement de montée, la surface portante de la marche s'éloigne en oblique du nez de la marche suivante.
- 6 - Marches d'escalier selon la revendication 1, caractérisée par le fait que les ciseaux sont reliés entre eux deux à deux par des barres servant d'axes et travaillant en torsion pour maintenir la même hauteur sur les deux côtés, quelque soit la charge supportée et sa position sur la surface portante de la marche.
- 7 - Marches d'escalier selon la revendication 1, caractérisée par le fait que sa surface est rectangulaire pour les escaliers droits.
- 8 - Marches d'escalier selon la revendication 1, caractérisée par le fait que sa surface est trapézoïdale pour les escaliers courbes.

9 - Marches d'escalier selon la revendication 8, caractérisées par le fait que les marches sont retournables, afin de pouvoir équiper aussi bien les escaliers tournants à droite qu'à gauche.

40 10 - Marches d'escalier selon la revendication 8, caractérisées par le fait que ces marches retournables sont alimentées en énergie par la tranche.

45 11 - Marches d'escalier selon la revendication 2, caractérisées par le fait que si plusieurs usagers utilisent l'escalier en même temps, des boutons de commandes à distance, situés en haut et en bas permettent de mettre en service ou hors service l'installation.

12 - Marches d'escalier selon la revendication 1, caractérisées par le fait qu'une butée réglable bloque chaque marche dans sa position haute à la bonne hauteur par rapport à la suivante.

50 13 - Marches d'escalier selon la revendication 12, caractérisées par le fait que les bords avant et arrière du plan supérieur des marches sont arrondis afin d'éviter tout accrochage possible causé par un effet de seuil si la hauteur en fin de course n'était pas bien réglée.



